markable circumstance is "that if the magnetizer touch the body of the sleeper with his hand, the latter immediately acquires the power of hearing and understanding the magnetizer, though he remains incapable of hearing any other person."

"It is also extremely remarkable, that the will of the *magnetized* seems to be entirely under the control of the magnetizer. It appears, indeed, to be nothing but an instrument in his hands, which he directs and uses at pleasure. The person magnetized acts only through him; his desires, his thoughts are influenced by him; even his muscles, and limbs, and senses become paralyzed at the command of the magnetizer. The latter can extract from him his most secret thoughts, and compel him to disclose facts or circumstances within his knowledge, affecting his own character or interest, or those of others, and which he may have the strongest motives to keep inviolably secret."

That under certain pathological conditions of the nervous system, it is not impossible for many phenomena, bearing a similarity to those described as the effects of magnetism, to occur, must be admitted; something approaching to them we know does actually take place during a state of somnambulism; but that these phenomena can be produced on one individual by the mere touch or volition of another—continue so long as he pleases, and immediately disappear when he wills them to cease, we have not, we confess, sufficient credulity to believe; and yet this it is which constitutes the very substance of animal magnetism.

We have devoted more space to a notice of the "First Lines of Physiology" than a work of this kind may, perhaps, be considered to merit. We were, however, so much pleased with the manner in which, taken as a whole, it is executed—the general accuracy of its contents, and the very masterly manner in which the author has digested and arranged the physiological facts and deductions which it contains, that we felt desirous it should be extensively known. As a text book or an introduction to the study of physiology, we know of none we can more highly recommend. We have noticed a few omissions which it will be proper to supply whenever a second edition shall be called for.

D. F. C.

Art. XII. *Essai sur la Colique de plomb; thèse présentée et soutenue à la Faculté de Medicine de Paris, le* 10 *Juillet*, 1835. Par Augustin Grisolle, de Fréjus, Département du Var; Docteur en Medicine; Interne de l'Hotel Dieu; Membre de la Societé Médicale d'Observation; Titulaire de la Societé Anatomique; Elève lauréat de l'école pratique; Bachelier ès-sciences.

Essay on Lead Colic. By A. Grisolle, M. D., &c.

The above work, consisting of only about 80 quarto pages, is replete with valuable information. Most of the important and interesting questions connected with the history of the disease in question, are elucidated by a direct appeal to nature. The author presents us with a complete and exact analysis of the recorded histories of 58 patients affected with disease arising from the influence of lead. These cases were collected by M. Grisolle in the year 1834, at the hospital Beaujon, in the wards of M. Martin-Solon. The majority occurred in workmen employed in the white lead manufactories in the neighbourhood of Paris. These establishments were frequently visited by our author, who examined with care the different processes of manufacture, in order the more fully to appreciate the various morbific influences to which the workmen were exposed. At the bed side, the previous history, the symptoms, and the effects of remedies were observed with the greatest care and minuteness, and noted on the spot. These various facts were then compared together, their similarities and discrepancies remarked, and conclusions arrived at by rigid induction.

This work is precisely of that kind which is best calculated at present to promote the interests of medical science. Its materials are fresh from the hands of nature; they are not confided to memory, but are at once recorded on paper; all vague impressions derived from general and loose observations are discarded; nothing is admitted except the most positive facts, and those conclusions which can be directly established from them,—such are the characteristics of this little work, in which is to be found more positive information than in many a bulky quarto. Our author has avoided, on the one hand, entering into loose discussions upon points purely hypothetical, in which imagination is usually appealed to rather than fact, whilst, on the other, he has taken care not to inundate us with a mass of crude and undigested observations of particular cases. He has analysed his observations, and given us, so to speak, their general expression upon every important point.

Of the various accidents which result from the absorption of lead and its different preparations into the system, those which belong to the digestive apparatus, are the most frequent. Next in order, are those which show themselves in the central nervous system, sometimes in the form of epileptic convulsions with delirium; at others, of paralysis of the limbs or organs of sense, &c.

Lead colic is characterized, according to our author, by acute abdominal pains, returning in paroxysms, and not augmented by pressure, accompanied by bilious vomiting, obstinate constipation, slowness of pulse, and finally cramps and other painful sensations, both in the upper and lower extremities. This order of symptoms, he thinks, never results from any other cause than the introduction of lead into the system, and hence the name of lead colic (*colique de plomb*) is peculiarly appropriate.

M. G. first inquires how far certain circumstances of season, climate, &c. may be considered as predisposing causes.

In order to determine the influence of seasons, he examined the records of the hospital Beaujon, where were treated the greater part of the workmen attacked with the disease in two manufactories of white lead, in the neighbourhood of Paris, those of Pecq and Courbevoie. The number of men employed in these establishments is nearly the same at all times; and the number of admissions from thence into the hospital were likewise found to be pretty equally distributed amongst the different seasons of the year, so that it is probable, contrary to the usually received opinion, that they exert but little influence upon the production of the disease. All workmen who handle lead in any shape may be affected with it; but it is especially observed among painters and those who are employed in manufactories of white and red lead. The latter class, although few in number, furnish, nevertheless, a greater number of examples of lead colic than the entire population of painters and all the other trades, in which lead is employed, put together.

Age appears to exert a decided influence upon the degree of susceptibility to the complaint. Thus it was found that men under 30 years of age remained in the manufactories, on an average, 65 days before contracting the disease, whilst those who were over 50 years were attacked at the end of 37 days. Whether women are more subject to it than men, is difficult to determine, because the former are so little exposed to the causes which produce it.

Dr. G. is inclined to think that excessive use of alcoholic liquors tends to favour its production, but the facts collected by him, which bear upon this question, are too few to enable him to come to a positive conclusion. It has been supposed that red lead possesses more deleterious properties than white, and, hence, that the workmen in the former were more exposed than those engaged in manufacturing the latter; but this does not appear to be in accordance with experience. Thus, eleven individuals at the manufactory of Clichy, were able to work in red lead 73 days before being taken sick, whilst the average residence of 12 workmen in white lead, in the same establishment, was only 65 days. This result shows, then, that the red oxyde of lead does not exert upon the animal economy a more deleterious influence than the subcarbonate. The facts possessed by Dr. G., do not enable him to state with any certainty, whether the different processes adopted in the manufacture of these substances, are accompanied by different results upon the human economy.

There are three ways by which lead may be introduced into the system, viz: absorption through the skin and through the pulmonary and gastro-intestinal mucous membranes. Our author regards cutaneous absorption in this case, as very problematical, and, in support of his opinion, he mentions, among other proofs, the fact that Dupuytren was in the habit of employing the acetate of lead as a dressing for burns, under which circumstances he considered it as highly beneficial; and that, nevertheless, this illustrious surgeon, in the course of his extensive practice, had never met with a single accident which he could attribute to it.

The absorbing powers of the mucous membrane of the respiratory passages are very active, and hence, one would be disposed to conclude, *à priori*, that the preparations of lead may be introduced into the economy in this way; several facts seem to support this supposition. Of this class are those cases in which the disease is known to have been developed in persons who have slept in apartments freshly painted.

But our author thinks that the greatest number of palpable proofs are in favour of the opinion which supposes that the particles of lead produce their effect by being mixed with the saliva or food, and thus taken into the stomach. How often, says he, do we see the disease declare itself among those who have drunk of water which has remained some time in leaden vessels, exposed to the air. Still more often does it occur in those who have made use of wine adulterated with litharge. The acetate of lead given internally has sometimes produced the disease, according to the accounts of Chomel and others.

But in whatever way lead enters the human body, it is certain that this metal exerts a manifest action upon the tissues long before the developement of the symptoms of colic. In proof of this it is only necessary to mention, that those who have been employed for some time in the manufactories acquire a pallid or yellowish complexion and a jaundiced tint of the eye; others grow rapidly thinner without experiencing at the same time any derangement of the digestive organs, and without being exposed to excessive labour or any impoverished diet. The alteration in the colour of the skin was observed in two-thirds of the workmen. The period at which it was first perceived, varied from eight days to two months after their admission into the factories, the mean time being twenty-seven days. The nervous system is sometimes affected, and amongst other accidents, epileptic paroxysms are produced, which do not appear to differ from ordinary epilepsy, except in their much greater severity.

The deleterious influence of lead is not confined to man, for it is found that the cats and dogs which frequent the manufactories soon die. Horses and rats, however, do not appear to suffer.

An attack of lead colic is generally preceded by slight and progressive derangements in the functions of the gastro-intestinal organs, such as diminution or loss of appetite, pains in the belly, and a diminution in the number of alvine evacuations, which often become hard and of a very deep colour. The mean duration of the premonitory symptoms, in the twenty-nine cases where Mr. G. took notes of them, was nine days and a half. When the disease is fully formed, the abdominal pains become more intense and are accompanied by nausea, bilious vomiting and obstinate constipation; the urinary secretion is diminished and the pulse rather slower than natural. Pain in the abdomen is, of all the symptoms, the most constant, and that which best marks the commencement of the disease. In three cases only were these pains general over the whole abdomen; in the others they were mostly confined to one or two regions. Sometimes the pain is obtuse and constant, at others very severe and coming on at intervals. It was relieved by pressure in forty out of the fifty-two cases observed by Mr. G.; in seven it was not affected by it, and in the remaining five cases was evidently increased by this means. He considers these pains as altogether neuralgic, and does not admit the explanation which attributes them to partial distension of the digestive tube, owing to the interception of air in certain parts. Whenever the belly was examined, either during a paroxysm or afterwards, it was uniformly impossible, either through the medium of the eye or touch, to determine the existence of isolated and sonorous tumours, which, however, should be found, if the latter explanation was correct.

Retraction of the anterior walls of the belly has generally been considered as one of the characteristics of saturnine colic; but this symptom is far from being constant, and Stoll even asserts that he has rarely observed it. Of forty-six of the patients in whom this symptom was carefully sought after, there were thirty-one in whom the belly was of the natural form and size; in the remaining fifteen it was retracted, but generally to so trifling an extent that it was necessary to make a most cautious examination, in order to determine that it was so. Moreover, the retraction was never augmented during a paroxysm of pain however violent.

In every case the tongue was found moist, of a rose colour, but little thickened; in half the cases it was covered with a whitish or yellowish fur. In one patient it became dry, grayish and furrowed in the centre; this condition coincided with a frequent pulse and febrile heat. These symptoms disappeared at the end of twenty-four hours, and the tongue again became humid. Thus, these results are precisely the same with those arrived at by M. Louis, in his researches on typhoid fever.

The thirst was severe in one-sixth of the cases, but in the others was either entirely absent or hardly observable.

Vomiting occurred in thirty-two out of forty-six cases, and in all except two, the matters thrown up were of a greenish colour and excessively bitter. In the cases where this symptom was present, the mean duration of the disease was eight days. Those who were affected merely with nausea, remained five days under treatment; finally, those who presented no symptoms of gastric uneasiness, were restored at the end of four days and a quarter.

Lead appears to exert a sedative influence upon the circulatory system, the number of pulsations varying in the cases before us from 48 to 84 per minute, and in only three instances did it present more than its ordinary hardness.

The skin was always of a natural temperature.

The urine was diminished in quantity, of a reddish colour, and depositing a sediment, whilst at the same time, in one-fourth of the cases it caused a burning sensation in traversing the canal of the urethra. This last symptom, which was never very violent, was evidently owing, in one case, to the presence of acid in the urine, and was promptly relieved by the administration of alkalies.

In a little more than one-fourth of the cases, the spermatic cord and testicles were the seat of the most acute pain, the exacerbations of which coincided with those of the abdomen, of which they seemed to be only an extension.

The lower extremities were the seat of various painful sensations in three-fourths of the cases, whilst the upper were affected in only half and in a less severe manner. The loins also, were sometimes attacked with pain, which appeared to be the same in character with that which belong to the muscles of the limbs; sometimes they were radiated in the form of bands like those which have their point of departure in the spinal column.

Two individuals were for the first time in their lives attacked with epileptic paroxysms after a short residence in the factories. They both died at the end of thirty-six hours. In both, the symptoms of colic had been so slight, that they were able to continue their work, and the epileptic attack came on suddenly. Here, evidently, it is impossible to attribute the convulsions to a sympathetic affect derived from the stomach or intestines; but we are obliged to admit the direct action of the lead upon the cerebro-spinal system.

A curious circumstance connected with the history of this disease is the occasional occurrence of amaurosis, a symptom, however, which never occurs, except in conjunction with others indicative of a disordered state of the brain, such as epilepsy, delirium, &c.

Dr. G. has only once noticed the occurrence of paralysis of the limbs during the patient's stay in the hospital, and then it took place in an athletic man, attacked for the first time with colic, accompanied with delirium.

This disease most commonly terminates favourably; in fact, death hardly ever takes place, except when epileptic or other symptoms referable to disease of the brain are present. Of the 56 cases observed by Mr. G., three died, viz: two of epilepsy and the third from an attack of Asiatic cholera. In the two first, the whole intestinal canal was examined with the greatest care, and there was nowhere found the least unnatural coloration, or softening or thickening of the tissues. These facts are in accordance with those published by Andral, Louis, Retz, and others. It is now, in fact, clearly established that the stomach and intestines of those who die of this species of colic, do not present the least trace of inflammation. It is worthy of remark, that in all the cases above alluded to, the treatment by drastic purges had been employed, and yet the mucous membrane presented no marks of the action of these irritating medicines. It has been said that the intestines are contracted in this disease, but the truth of this assertion is far from being proved, and Chomel thinks that this condition of the parts has rather been supposed to exist during life than observed after death. In both the cases who died with epileptic convulsions, the cerebral convolutions were found flattened, and the anfractuosities almost effaced; the consistence of the brain was diminished throughout, and in one case the spinal marrow was less coherent than natural. No trace of injection, of serous or sanguineous effusion was found in any part of the nervous centres.

The nature of lead colic has been a subject of much discussion, and our author does not hesitate to pronounce it a purely nervous affection. He finds ample proof of this in the absence of fever, in the intensity of the pain, which is relieved by pressure and is paroxysmal in its character, yet, at the same time that it often shoots along the known track of certain nervous ramifications; add to these, several symptoms which are described by Georget and others, as belonging to the intestinal neuroses, such as a whitish tongue, obstinate constipation, burning sensation in passing the urine, &c.

He looks upon the nerves distributed to the intestines as the special seat of the disease. The supposition of its nervous character is further corroborated by the fact, that pathological anatomy does not reveal to us any lesion of the intestinal canal, and also by the happy results which uniformly follow the employment of narcotics and irritants. Inflammation of the intestines may, and doubtless does sometimes occur in the course of this disease, but only as a complication, and we agree with our author that it is impossible to maintain with any degree of probability its inflammatory nature.

Of the diagnosis we shall say nothing. The prognosis is generally favourable, except, as before observed, in those cases where cerebral symptoms make their appearance.

The treatment is either prophylactic or curative.

Prophylactic treatment.—It is highly important that the lead factories should be constructed so as to admit of free ventilation. Our author states that at two of the factories of Paris, which are built upon a flat, surrounded by hills, and so constructed as to admit but of imperfect ventilation, the mean term of residence of the men employed is about six weeks; whilst at Courbevoie, which is situated upon a hill, and well aired, they can generally remain three months before becoming sick. He recommends the enclosing some of the apparatus in boxes of wood, and the adoption of every means calculated to secure the workmen from the dust and emanations which are constantly rising. To these means may be added, on the part of the workmen, the frequent use of baths, the avoiding intemperance, which appears to increase the susceptibility to the disease, and the taking care not to enter the factories of a morning until after having eaten.

It has been stated by Gendrin, that the internal use of sulphuric acid, is an efficacious preservative against the effects of lead. The observations of our author do not confirm this assertion. He found that in one of the factories, those who made use of the sulphuric acid fell sick at the end of forty-nine days, whilst those who did not, remained forty-four days. In another establishment, (Clichy) seventy-six days was the mean term of residence of those who did not make use of the acid, whilst fifty was the term for those who did. Hence he concludes that sulphuric acid cannot be considered as a preservative; but on the contrary, that we should rather be disposed to attribute to it the property of favouring the deleterious action of lead. This latter supposition is further corroborated by the fact, that acidulated drinks, when long continued, so far from exciting, finally weaken the digestive apparatus.

Curative treatment.—Mr. G. thinks that it is impossible to adopt, in any disease, a uniform method of treatment applicable to all cases; that the disease before us is one in which an exclusive method would be less irrational than in most others, because the patients are generally placed under similar circumstances, as regards age, sex, condition of life, mode of contracting the disease, &c.; but that nevertheless, the disease often presented differences which it was important to notice in order to make useful modifications in the treatment. In the great majority of the cases which we are considering, purgatives and narcotics were employed, or in other words, the *method of la Charité, modified.* It is impossible to deny the success of this plan, of which opium and purgatives form the basework. In the cases before us, the purgative medicines were mostly given in enemata, which were made in the following manner, viz: senna in decoction, ℥j; sulphate of soda, mel mercurialis, āā ℥ij; aquæ, q. s.

These enemata were administered either alone or at the same time with opium to sixteen patients. In every case there was marked relief at the end of from four to twelve hours after their administration —seven out of the sixteen were labouring under severe attacks of colic; they took during the whole course of treatment, the mean duration of which was five days and a quarter, six enemata and five grains of opium. The patients were considered as cured, when the pains in the belly had ceased; the stools were re-established, the appetite had returned, and healthy digestion perfectly re-established. In the other nine cases, the disease was mild, and was cured after a mean duration of four days and a quarter, four purgative enemata and three grains of opium having been given. In half the above cases, vomiting was present, but disappeared as soon as stools were obtained. It does not do to attribute the relief of the pain to opium alone, for in six cases it was not administered; and when it was given, it was not till after the constipation had been overcome, and partial relief obtained. In severe cases, where the constipation was obstinate, it was frequently necessary to give several enemata in succession, in order to produce a decided effect.

In six cases, purgative medicines were administered, both by the mouth and anus; here the cure was accomplished in seven days and a quarter. The purgatives employed were castor oil, generally combined with croton oil, and the oil of euphorbia. The croton oil given in doses of from one to three drops, never produced superpurgation. The oil of euphorbia was given in drachm doses, and almost always brought on vomiting, and sometimes without producing alvine evacuations. The patient experienced, whilst under its operation, a general uneasiness, which was in one case accompanied with fainting; hence, Mr. G. thinks that this purgative should not be employed. Besides, its effects are not constant; for at one time it acts exclusively on the stomach, at another on the intestines; and sometimes on both, without our being able to discover the cause of these differences.

In a few cases it was necessary to administer emetics. These were resorted to when the vomiting of bile was obstinate, the mouth bitter, the tongue covered with a thick fur, and the epigastrium the seat of uneasiness, rather than of positive pain. "I, (Dr. G.,) have never seen the vomiting resist the employment of from sixteen to twenty-four grains of epicacuanha; and in every case, the patients experienced decided relief after the operation of the medicine, although no alvine evacuation was produced." The emetic was given to six patients, all attacked with the disease in its most severe form, but without complication of inflammatory action; the cure was accomplished in eight days and a fraction. In four cases it was found necessary to give up the use of purgatives, on account of their inefficacy, and because febrile symptoms developed themselves. Here general bleeding was employed. The blood when treated by proper reagents, furnished no sign of the existence of lead in it.

In two cases, a simple laxative treatment, combined with opium, was tried, but it was found difficult to re-establish the alvine evacuations, and more active means were finally resorted to; the cure was not accomplished until near the eleventh day.

The treatment by opium alone was followed by similar results.

In conclusion, our author observes that the patients treated on the evacuant plan, got well in the space of five days and a quarter, four days and a quarter, and eight days. He has never seen any other method followed by as beautiful results. In general, he prefers the administration of purgatives in enemata, rather than by the mouth.

Tobacco has been recommended in the form of fomentations to the belly, and in enemata, and doubtless is sometimes followed by good results, but its effects are so uncertain, and its administration so difficult and dangerous, that it should not be resorted to, except to relieve violent constipation, where other remedies have failed.

It has been stated by Gendrin, that sulphuric acid, given in doses of a drachm, to a drachm and a half, in three or four pints of water, will cure the disease in three or four days, and cause an evident amelioration of the symptoms as soon as the second day. In order to appreciate the effect of any plan of treatment in this disease, cases of a pretty severe character must be chosen, as the mild ones will get well under almost any plan of treatment. The sulphuric acid, as recommended by Gendrin, was tried in four severe cases, belonging to the series we are examining. In none of them was any improvement observable on the second day, and in two the abdominal pains were augmented. In a third, cerebral symptoms appeared, and in the fourth, the colic remained stationary. The treatment was consequently not persisted in, and a combination of the purgative and antiphlogistic methods was resorted to. Our author thinks that antiphlogistics are inapplicable to cases of simple lead colic, and that they should only be resorted to when inflammatory symptoms present themselves. These are to be judged of by the force and frequency of the pulse, the heat of skin, and the inefficacy of the purgative and narcotic plan of treatment. Tenderness on pressure, which, it will be recollected, was observed in five cases, is, he thinks, no indication for the employment of antiphlogistics, three of the five having recovered under the treatment of La Charité. The facts, however, collected by Dr. G., in relation to the antiphlogistic method, are too few to enable us to come to any positive conclusion from them. It has been adopted by Renauldin at the Hospital Beaujon, but in three cases which Mr. G. had an opportunity of observing there under the treatment of this physician, he was obliged to have recourse to opiates. Dehaën adopted the same method in the last century, but was obliged to renounce it. Chomel thinks that where antiphlogistics are relied upon, the duration of the disease is lengthened, and relapses are more frequent.

Whatever plan of treatment is adopted, the diet of the patient should be restricted; food should be given gradually, and not till after the symptoms have entirely disappeared. In the treatment of the cerebral symptoms, such as epilepsy, amaurosis, &c. purgatives, combined with blisters to the back of the neck, the temples, or scalp, were found the most efficacious.

T. S.

Art. XIII. *Traité Clinique des Maladies du Cœur, précédé de Recherches Nouvelles sur l'Anatomie et la Physiologie de cet Organe.* Par J. Bouillaud, Professeur de Clinique Médicale à la Faculté de Médecine de Paris. Paris, J. B. Bailliére, 1835.

Clinical Treatise on the Diseases of the Heart, preceded by new researches into the Anatomy and the Physiology of that Organ. By J. Bouillaud, Professor of Clinical Medicine at the Faculty of Medicine, of Paris. 2 vols. Paris. J. B. Baillière, 1835.

The name of Dr. Bouillaud must be familiar to most of our readers, as the author of a work on the epidemic cholera of 1832, of one on essential fevers, of another on encephalitis, and, lastly, as the editor and in part the author of a Treatise on Diseases of the Heart, published as the result of the joint inquiries of MM. Bertin and Bouillaud. The last named work was principally due to the individual labours of M. Bouillaud; a few chapters only were written by M. Bertin. Since the publication of this work on diseases of the heart, M. Bouillaud has added largely to his reputation and to his experience. He has become professor of clinical medicine at the faculty of Paris, where he was the successful competitor of Louis and Rostan, both men of more mature age and of the best established professional reputation.

The position of M. Bouillaud at the school of medicine, placed him under favourable circumstances for the prosecution of his researches. He has fully availed himself of these facilities, and has cultivated pathological science with ardent devotion, more especially in connexion with the diseases of the heart. The new facts which he has collected are so numerous that he has entirely rewritten his original work, and has so much enlarged the subjects formerly treated of as to give a character of originality to the whole treatise.

Some of the diseases of the heart, especially the inflammation of its internal membrane, have been so much more thoroughly investigated by Dr. Bouillaud than they had been by previous observers, that the knowledge of these affections may be said to date from his labours.